

REMARKS

The Examiner rejected claims 15-17, 19, 21-24, 26-28, 30-38, 40-43 and 45-48 under 35 U.S.C. §103(a) as allegedly being unpatentable over LaFollette *et al.* 6,610,440, previously cited, in view of Jenson 6,924,164.

The Examiner rejected claims 18, 20, 25, 29 and 39 under 35 U.S.C. §103(a) as allegedly being unpatentable over LaFollette *et al.* 6,610,440 in view of Jenson, as applied to claims 15-17, 19, 21-24, 26-28, 30-38, 40-43, 45-48 above, and further in view of Bates *et al.* 5,561,004 and Wolk *et al.* 2001/0000744.

Applicants respectfully traverse the §103 rejections with the following arguments.

35 U.S.C. §103(a): Claims 15-17, 19, 21-24, 26-28, 30-38, 40-43 and 45-48

The Examiner rejected claims 15-17, 19, 21-24, 26-28, 30-38, 40-43 and 45-48 under 35 U.S.C. §103(a) as allegedly being unpatentable over LaFollette *et al.* 6,610,440, previously cited, in view of Jenson 6,924,164.

Applicants respectfully contend that claim 15 is not unpatentable over LaFollette in view of Jenson, because LaFollette in view of Jenson does not teach or suggest each and every feature of claim 15.

As a first example why claim 15 is not unpatentable over LaFollette in view of Jenson, LaFollette in view of Jenson does not teach or suggest the feature: "forming at least one battery entirely within the wiring levels I through K, wherein I is selected from the group consisting of 1, 2, ..., and N, wherein K is selected from the group consisting of I, I+1, ..., and N-1, wherein I does not exceed K". The preceding feature of claim 15 requires an existence of at least one wiring level above the battery (i.e., at wiring levels K+1, ..., N). However in FIG. 3 of LaFollette, there is no wiring level above the second microscopic electrode 40".

The Examiner argues: "LaFollette *et al.* teaches forming a battery within conductive layer but does not teach more conductive layers formed over the battery. However, Jenson *et al.* teaches at fig. 1 D, there are more conductive layers 65....77 formed over battery 59/61/63... It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified LaFollette *et al.*'s process by forming more conductive layers as suggested by Jenson because more batteries can be formed within all the conductive layers."

In response, Applicants respectfully contend that in Jenson both the battery and the conductive layers are external to the alleged integrated circuit 55. The Examiner has not

produced a single reference disclosing a configuration within an integrated, said configuration comprising conductive layers over a battery, as required by claim 15. Therefore, the battery and the conductive layers in Jenson are out of context with respect to claim 15 and the use of Jenson as a prior art reference is not persuasive.

In addition, the Examiner's reason of "more batteries can be formed within all the conductive layers" for modifying LaFollette is not persuasive, because LaFollette's structure permits already permits more batteries to be formed within all the conductive layers disclosed in LaFollette. LaFollette shows multiple batteries in FIG. 3 and there is no stated limitation in LaFollette as to the number of batteries that can be formed within the conductive layers.

Moreover, the Examiner has not supplied a legally persuasive argument as to why a person of ordinary skill in the art would modify LaFollette by the alleged teaching of Jenson in relation to claim 15. In particular, established case law requires that the prior art must contain some suggestion or incentive that would have motivated a person of ordinary skill in the art to modify a reference or to combine references. See *Karsten Mfg. Corp. v. Cleveland Gulf Co.*, 242 F.3d 1376, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001) ("In holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in a way that would produce the claimed invention"). See also *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the motivation obvious unless the prior art suggested the desirability of the modification."). The Examiner has not made any showing of where the prior art suggests forming more batteries within all the conductive layers. Thus, the Examiner

has provided an alleged motivation for the combination by speculation, and not by teachings of the prior art. By not citing any suggestion or incentive in the prior art for forming more batteries within all the conductive layers, the Examiner has failed to establish a *prima facie* case of obviousness in relation to claim 15.

As a second example why claim 15 is not unpatentable over LaFollette in view of Jenson, LaFollette does not teach or suggest the feature: "forming a layer of electronic devices on the semiconductor wafer, wherein the layer of electronic devices includes at least one electronic device" (emphasis added).

Although the Examiner alleges that layer 30 in LaFollette is a layer of electronic devices, Applicants contend that LaFollette discloses layer 30 to be of layer of silicon dioxide which is not a layer of electronic devices as required by claim 15. See LaFollette, FIG. 3 in which layer 30 is identified to be a layer of silicon dioxide. Applicants additionally contend that the Examiner's citation of col. 20, lines 15+ of LaFollette is not persuasive, because col. 20, lines 15+ of LaFollette does not disclose that layer 30 includes any electronic device.

In a prior office action mailed 03/16/2005, the Examiner argues: "LaFollette clearly teaches at col. 12, lines 58-65, forming integrate circuit (IC, electronic device), MEMS and batteries on the same device". In response, Applicants note that FIGS. 4-5 of LaFollette show that system component 59' (IC, MEMS, etc.) is not included within layer 30 as alleged by the Examiner, but is instead on top of the polyimide spacer 38" which is in turn on top of the layer 30.

Therefore, Applicants respectfully contend that the preceding feature of claim 15 does not

read on LaFollette.

As a third example why claim 15 is not unpatentable over LaFollette in view of Jenson, LaFollette does not teach or suggest the feature: "forming a first conductive **metallization** and a second conductive **metallization** within the N wiring levels" (emphasis added).

The Examiner alleges that in LaFollette: the first conductive metallization is represented by interconnect 46, and the second conductive metallization is represented by interconnect 47 or 49. However, LaFollette does not disclose that any of interconnects 46, 47, and 49 comprise metal. Therefore, Applicants respectfully contend that LaFollette does not disclose that any of interconnects 46, 47, and 49 comprise conductive **metallization** as required by claim 15.

Furthermore, Applicants respectfully contend that LaFollette does not inherently teach that any of interconnects 46, 47, and 49 comprise conductive **metallization**, since the interconnects 46, 47, and 49 does not have to include metal and may comprise a non-metallic electrically conductive material such as a electrically conductive semiconductor material. As an example, United States Patent U.S.P. 5,923,585 to Roberts et al. demonstrates the use of a polysilicon interconnect to effectuate electrically conductive coupling.

Therefore, Applicants respectfully contend that LaFollette does not teach the preceding feature of claim 15.

Based on the preceding arguments, Applicants respectfully maintain that claim 15 is not unpatentable over LaFollette in view of Jenson, and that claim 15 is in condition for allowance. Since claims 16, 17, 19, 21-24, 26-28, 30-38, 40-43 and 45-48 depend from claim 15, Applicants

contend that claims 16, 17, 19, 21-24, 26-28, 30-38, 40-43 and 45-48 are likewise in condition for allowance.

In addition, LaFollette does not teach or suggest features specific to the dependent claims.

As a first example, LaFollette does not teach or suggest the following feature of claim 16: "polishing off top portions of the electrolyte layer and the second conductive material resulting in a planarized top surface of the electrolyte layer and the second conductive material, wherein a U-battery has been formed from the first conductive layer as the first electrode, the electrolyte layer as an electrolyte, and the second conductive material as the second electrode".

As a second example, LaFollette does not teach or suggest the following feature of claim 23: "polishing off top portions of the second conductive material, of the electrolyte layer, and of the first conductive layer, which results in a planarized top surface of the ILD layer, of the first conductive layer, of the electrolyte layer, and of the second conductive material, wherein a conductive contact is formed on the planarized top surface, wherein the conductive contact is in conductive contact with the second conductive material, wherein the first conductive metallization includes the conductive plate, and wherein the second conductive metallization includes the conductive contact, and wherein a U-battery With Double Extension has been formed from the first conductive layer as the first electrode, the electrolyte layer as an electrolyte, and the second conductive material as the second electrode".

As a third example, LaFollette does not teach or suggest the following feature of claim 27: "forming a second conductive layer on the electrolyte layer, wherein the second conductive layer includes a second conductive material, wherein the first conductive metallization includes

the first conductive plate, and wherein a S-battery has been formed from the first conductive layer as the first electrode, the electrolyte layer as an electrolyte, and the second conductive layer as the second electrode”.

As a fourth example, LaFollette does not teach or suggest the following feature of claim 43: “wherein the step of forming a layer of electronic devices includes forming the layer of electronic devices during a Front-End-Of-Line (FEOL) processing of the integrated circuit, wherein the step of forming N wiring levels includes forming the N wiring levels during a Back-End-Of-Line (BEOL) integration of the integrated circuit, wherein the step of forming a first conductive metallization and a second conductive metallization includes forming the first conductive metallization and the second conductive metallization during the BEOL integration of the integrated circuit, and wherein the step of forming at least one battery includes forming the at least one battery during the BEOL integration of the integrated circuit”.

As a fifth example, LaFollette does not teach or suggest the following feature of claim 45: “wherein a portion of the first conductive metallization or a portion of the second conductive metallization is within wiring level J such that $J > K$ ”.

As a sixth example, LaFollette does not teach or suggest the following feature of claim 46: “wherein a first electrically conductive path from the first electrode to the at least one electronic device comprises the first conductive metallization and is entirely within the N wiring levels, and wherein a second electrically conductive path from the second electrode to the at least one electronic device comprises the second conductive metallization and is entirely within the N wiring levels.”.

As a seventh example, LaFollette does not teach or suggest the following feature of claim

47: "wherein $K = I$ ".

As a eighth example, LaFollette does not teach or suggest the following feature of claim

48: "wherein N is at least 3, and wherein K is selected from the group consisting of I , $I+1$, ..., and $N-2$ ".

35 U.S.C. §103(a): Claims 18, 20, 25, 29 and 39

The Examiner rejected claims 18, 20, 25, 29 and 39 under 35 U.S.C. §103(a) as allegedly being unpatentable over LaFollette *et al.* 6,610,440 in view of Jenson, as applied to claims 15-17, 19, 21-24, 26-28, 30-38, 40-43, 45-48 above, and further in view of Bates *et al.* 5,561,004 and Wolk *et al.* 2001/0000744.

Since claims 18, 20, 25, 29, and 39 depend from claim 15, which Applicants have argued *supra* to not be unpatentable over LaFollette in view of Jenson under 35 U.S.C. §103(a), Applicants maintain that claims 18, 20, 25, 29, and 39 are likewise not unpatentable over LaFollette in view of Jenson and further in view of Bates and Wolk under 35 U.S.C. §103(a).

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invites the Examiner to contact Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0457.

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